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(56) Documents Cited

GB 2258599 A WO 88/42186 A1 WO 97/01272 A1  
WO 87/02863 A1 US 5383301 A US 5253448 A  
US 4411093 A

(58) Field of Search

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(54) Abstract Title

Adhesive insect trap

(57) Insect-paper (10) comprises a substrate (12) coated with a transparent tacky adhesive (16), the substrate (12) is printed with at least one discrete optically distinguishable image (14). The insect-paper (10) is formed by printing the substrate (12) with the image (14) and then coating the printed substrate (12) with the adhesive (16). The image (14) may be an irregular shape such as an insect. The paper may have a protective covering (18) with a layer of release material 20.

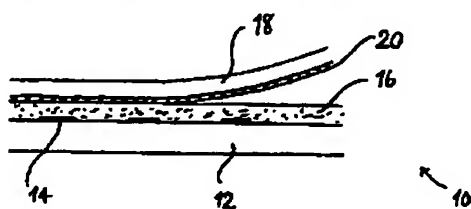


FIGURE 1

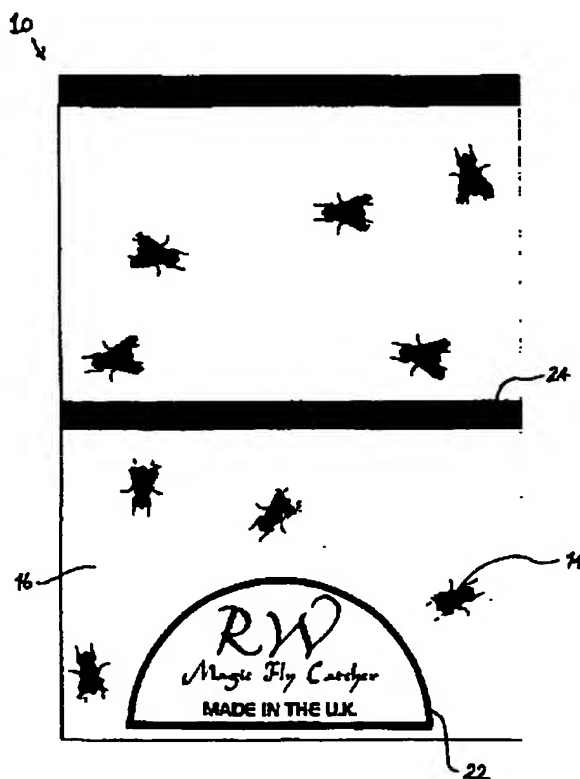


FIGURE 2

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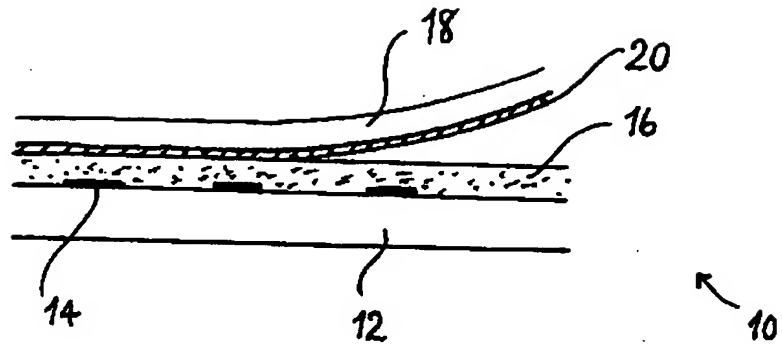


FIGURE 1



INSECT-PAPER AND METHODS FOR ITS FORMATION AND USEField of the invention

5 The present invention relates to an insect-paper and to methods for its formation and use.

Background of the invention

10 Insect-papers such as fly-papers are known which comprise a substrate, usually formed of paper, having an exposed coating of a composition comprising a tacky adhesive. The composition usually includes components which attract flying insects, for example by odour. In use the product is hung in a position where flying insects are considered a nuisance. Flying insects which are attracted to the product  
15 contact the tacky adhesive and are unable to detach themselves therefrom.

Unfortunately, the attractant components which are used in such products often have an odour which is unpleasant to  
20 humans and/or are toxic. The use of such products is therefore limited, their use in kitchens and eating places being substantially excluded. Although more sophisticated devices are available for use in such environments, they are costly and require the use of electrical power which may not  
25 always be readily available.

SUMMARY OF THE INVENTION

30 This invention is based upon the surprising discovery that the appearance of the product significantly influences the attraction of flying insects thereto.

Thus, according to a first feature of the invention, there is provided an insect-paper comprising a substrate having an

exposed coating of a tacky adhesive, characterised in that the adhesive is transparent and the substrate is printed with at least one discrete optically distinguishable image.

5 While not wishing to be bound by theory, we believe that flying insects observe the printed image on the insect-paper and, depending upon the shape, size and distribution thereof, confuse this image with the appearance of another insect. The natural gregarious nature of the insects  
10 encourages them to land upon the insect-paper. It would appear that the fact that the printed image is stationary only adds to this confusion. It is possible that the image appears to the flying insect as a dead insect of the same species.

15 The size, shape and distribution of the printed images can be optimized according to the prevailing insect species. For example, each image may occupy a surface area of from 20 mm<sup>2</sup> to 200 mm<sup>2</sup>, while the total printed area is preferably  
20 from 1% to 10% of the coated substrate area. Ideally, the number of the images lies between 150 and 1500 per m<sup>2</sup>. The images preferably have an irregular shape, and in particular the images have the shape of the prevailing insect. It is of advantage if the image is substantially life-size, that  
25 is the dimensions of the image are between 50% and 150% of the corresponding average dimension of the prevailing insect population.

30 It has also been found that the colour of the substrate and of the printed images is important. The colours to be used can be optimised according to the prevailing insect species. While images printed in black on a white substrate background give successful results, improved results can be

obtained where the image is printed in green on a contrasting colour. In any event, it is preferred that the images are printed in a relatively dark colour on a relatively light background.

5

A suitable tacky adhesive is preferably selected from hot melt adhesives. The coating temperature can be optimised according to the nature of the adhesive used. Preferably the coating temperature is high enough for the adhesive to be sufficiently mobile to enable uniform coating, but not so high that degradation of the adhesive occurs, resulting in a loss of transparency. A preferred coating temperature is between 100° and 200°C. The coating thickness of the transparent tacky adhesive is preferably between 30 and 300 g/m<sup>2</sup>. If a thinner coating is used, it may be insufficient to retain the trapped insects. With a higher coating thickness, some loss of transparency may occur. The adhesive is preferably free of components toxic to humans. The adhesive may be coated onto one or both sides of the substrate.

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The substrate may be in the form of a film, sheet or web. The substrate material will usually be paper, although substrates formed of plastics or other materials may also be used. The word "paper" in the term "insect-paper" used herein is to be interpreted accordingly.

25

According to a second aspect of the invention, there is provided a method of forming insect-paper comprising printing a substrate with at least one discrete optically distinguishable image and thereafter coating the printed substrate with a transparent tacky adhesive.

30

5 The printed coated substrate may thereafter be laminated  
with a peel-off protective covering, such as a removable  
coated paper strip, having a layer of release material, such  
as a silicone, in contact with the tacky adhesive coated on  
the substrate. The protective covering is peeled off before  
the product is used. In use, the insect-paper is exposed in  
an environment where flying insects of the same or visually  
similar species to that represented in the printed images  
are a nuisance. The flying insects are attracted to the  
10 insect-paper and become trapped thereon by the tacky  
adhesive.

15 The invention will now be further described, purely by way  
of example, with reference to the accompanying drawings, in  
which:

Figure 1 is an enlarged diagrammatic cross-section of a fly-  
paper according to the invention; and

20 Figure 2 is a plan view of the fly-paper shown in Figure 1,  
with the peelable protective covering removed.

25 As shown in the drawings, a fly-paper 10 according to the  
invention comprises a white paper substrate 12 having a  
dimensions of about 160 mm by 110 mm.

30 Nine discrete optically distinguishable images 14, each in  
the shape of a fly, are printed in black by offset printing  
onto one face of the substrate 12. Each image 14 is life  
size and occupies a surface area of about 60 mm<sup>2</sup>. The total  
printed area is about 540 mm<sup>2</sup>, amounting to about 3.1% of  
the coated substrate area.

Also printed on the substrate is some text 22 in green and lateral bars 24 in red. The printed substrate is coated with Pressen 957 V Pale Amber Block hot melt adhesive (ex Beardow & Adams (Adhesives) Limited, Milton Keynes, England), which is a substantially transparent tacky adhesive 16, to a coating thickness of between 80 and 100 g/m<sup>2</sup>. The coating process is carried out by preheating the adhesive to 150°C and coating using a coating slot heated to the same temperature. After coating, a peel-off covering 18, having a surface layer 20 of silicone release material, is laminated to the product with the silicone layer 20 in contact with the tacky adhesive 16.

In a comparative test, the fly-paper is exposed in an environment where flies are a nuisance, close to a similar control fly-paper which is identical except that no discrete optically distinguishable images are printed on the substrate. Flies are attracted to the fly-paper and become trapped thereon by the tacky adhesive, particularly adjacent the printed fly images and the green printed text. The fly-paper according to the invention attracted many more flies thereto, than the control product.



CLAIMS

1. Insect-paper comprising a substrate (12) having an exposed coating of a tacky adhesive (16), characterised in that the adhesive (16) is transparent and the substrate (12) is printed with at least one discrete optically distinguishable image (14).
2. Insect-paper according to claim 1, wherein the or each optically distinguishable image (14) occupies a surface area of from 20 mm<sup>2</sup> to 200 mm<sup>2</sup>.
3. Insect-paper according to claim 1, wherein the or each optically distinguishable image (14) has an irregular shape.
4. Insect-paper according to claim 3, wherein the or each optically distinguishable image (14) has the shape of an insect.
5. Insect-paper according to claim 1, wherein the total printed area is from 1% to 10% of the coated substrate area.
6. Insect-paper according to claim 1, wherein the number of the optically distinguishable images (14) lies between 150 and 1500 per m<sup>2</sup>.
7. Insect-paper according to claim 1, wherein the substrate (12) has a relatively light colour and the or each optically distinguishable image (14) is printed in a relatively dark colour.

8. Insect-paper according to claim 7, wherein the relatively dark colour is selected from green and black.

5 9. Insect-paper according to claim 1, wherein the coating thickness of the transparent tacky adhesive (16) is between 30 and 300 g/m<sup>2</sup>.

10 10. Insect-paper according to claim 1, wherein the adhesive (16) is free of components toxic to humans.

11. Insect-paper according to claim 1, wherein the substrate (12) is in the form of paper.

15 12. Insect-paper comprising a substrate (12) having a coating of a tacky adhesive (16), laminated with a peel-off protective covering (18), having a layer of release material (20) in contact with the tacky adhesive (16), characterised in that the adhesive (16) is transparent and the substrate (12) is printed with at least one discrete optically  
20 distinguishable image (14).

13. A method of forming insect-paper comprising printing a substrate (12) with at least one discrete optically distinguishable image (14) and thereafter coating  
25 the printed substrate (12) with a transparent tacky adhesive (16).

30 14. A method according to claim 13, wherein the printed coated substrate is thereafter laminating with a peel-off protective covering (18), having a layer (20) of release material in contact with the tacky adhesive (16) coated on the substrate (12).

15. A method of trapping flying insects of a given species comprising displaying an insect-paper (10) comprising a substrate (12) having an exposed coating of a tacky adhesive (16), characterised in that the adhesive (16) is transparent and the substrate (12) is printed with at least one discrete optically distinguishable image (14) representing an insect of said given species.

16. A method according to claim 15, wherein the or each discrete distinguishable image (14) is substantially life-size.



INVESTOR IN PEOPLE

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Claims searched: 1-16

Examiner: Paul Jenkins  
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## Patents Act 1977 Search Report under Section 17

### Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.S): A1M (MDA)

Int Cl (Ed.7): A01M 1/14, 1/16

Other: Online: WPI, EPODOC, JAPIO

### Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	GB 2258599 A (DAVIES) Whole document relevant	1-3, 5-11 & 15
X	WO 98/42186 A1 (SILVANDERSSON) Whole document relevant	1-3, 5-11, 13
X	WO 97/01272 A1 (SILVANDERSSON) Whole document relevant, see especially the figures and page 4 lines 32-34	1-7, 9-11, 13 & 15-16
A	WO 87/02863 A1 (SILVA MILJO) See siliconized protective layer 12, 13	—
A	US 5383301 (BABB) See backing member 36	—
X	US 5253448 (BYOM) Whole document relevant	1-3 & 5-14
X	US 4411093 (STOUT) Whole document relevant, see especially column 7 line 64 - column 8 line 35 and all the figures	1-11, 13 & 15-16

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	B	Patent document published on or after, but with priority date earlier than, the filing date of this application.